

SUCCESS STORIES

RAH-66 COMANCHE HELICOPTER

ENVIRONMENTAL QUALITY LIFE-CYCLE COST ESTIMATE



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The Environmental Quality Life-Cycle Cost Estimate (EQLCCE) for the RAH-66 Comanche Helicopter, completed in April 2000, was the Army's first attempt to identify and quantify environmental quality costs over the entire life-cycle for this weapon system. The EQLCCE was prepared in accordance with the U.S. Army Cost and Economic Analysis Center's (CEAC's) *Cost Analysis Manual*, July 1997. EQLCCE information can be used to identify areas of improvement such as material substitution, process changes and/or recycling, and potentially reduce the overall cost of the weapon system. An environmental Work Breakdown Structure (WBS) format was used to compile individual environmental quality cost elements and total costs for the entire program. The WBS includes all weapon system cost elements associated with environmental and regulatory compliance.

BENEFITS

The most significant benefits of performing an EQLCCE for a weapon system are:

- ◆ Improving the visibility of proven and potential environmental impacts and costs of the weapon system
- ◆ Providing opportunities for the Program Manager (PM), developer and fielding installations to identify and reduce environmental quality costs and determine alternative decisions associated with the weapon system
- ◆ Reducing the potential risk of remediation/restoration of environmental impacts with potential cost savings to the Army
- ◆ Providing an independent cost estimate acceptable to CEAC for validation
- ◆ Assisting the PM in defining compliance issues with federal environmental regulations and DoD acquisition requirements.

The RAH-66 Comanche is the Army's newest air cavalry reconnaissance helicopter, designed to operate with a minimal logistical burden while serving as the "eyes of the commander" on the 21st century battlefield. It is a lightweight, twin-engine advanced technology helicopter that will replace the current light fleet of tactically obsolete OH-58 and AH-1 helicopters for the primary missions of armed reconnaissance and attack, with embedded air combat capability.



COST SAVINGS

The Comanche EQLCCE identified \$329.8M (constant \$FY00) in environmental quality costs and provided several key benefits to the program management team. Pollution prevention decisions made early in the Comanche program have yielded examples of cost savings:

- ◆ The Comanche helicopter uses an aluminum-beryllium alloy in several subsystem components. Beryllium is an extremely hazardous material and poses a health and safety threat to workers when in dust or powder form. Originally, the Comanche maintenance concept called for these beryllium components to be repaired at Corpus Christi Army Depot (CCAD). This would have required CCAD to construct or modify special facilities, at a significant cost, to handle the beryllium. Unable to replace the beryllium with a less hazardous substitute, the program office changed the maintenance concept so that all beryllium components will be sent back to the original manufacturer when depot level repairs are required. This change eliminates the need for costly plant and equipment upgrades at CCAD.
- ◆ In an update effective 2 February 2000, it was decided to use aluminum instead of beryllium aluminum for an optical bench used in the electrical optical sighting system. Unlike beryllium aluminum, aluminum can be cast to the required stiffness and is less expensive.

BACKGROUND

In response to the 1995 Defense Appropriations Act requirements, the DoD was tasked to develop methodologies and databases for the analysis of environmental quality costs of major defense acquisitions/programs. Responsibility for performing environmental quality costs analysis of Major Defense Acquisition Programs in the Army is borne by the responsible Program Manager's Office, CEAC and various DoD agencies. PMs who acquire, fund, produce and maintain weapon systems must in accordance with DoD 5000.2-R determine environmental quality costs and impacts of weapon systems from conception through disposal.

Because of rising concerns about hidden environmental quality costs associated with Army weapon systems, a number of studies, including audits performed by the DoD Inspector General and the Army Audit Agency, have examined the Environmental, Safety and Health aspects of weapon systems acquisition. An Office of the Assistant Secretary of the Army (OASA) for Installations, Logistics and Environment briefing to OASA Research, Development and Acquisition on 9 September 1997 stated that over 75 percent of all Army pollution is caused directly or indirectly by weapon systems. Approximately 1.8 percent of the Army's Total Obligation Authority is spent annually on restoration, conservation, compliance and

pollution prevention. Consequently, every effort should be made to reduce the various costs when possible.

EQLCCE HANDBOOK

The U.S. Army Environmental Center (USAEC) Acquisition Support Team is working with CEAC and PMs to develop and verify environmental quality life-cycle costs for various Army weapon systems. The team is developing methodology to calculate these costs. The information will be compiled in an EQLCCE handbook for materiel acquisition that provides guidance for applying the methodology and conducting an EQLCCE for weapon systems. The handbook will also serve as a guide for PMs to estimate their program's environmental quality life-cycle costs.

In addition to the RAH-66 Comanche, the USAEC has completed EQLCCEs for the CH-47F Chinook and AH-64D Apache helicopter programs and the M2A3/M3A3 Bradley Fighting Vehicle System. The results from these EQLCCEs will be incorporated into the EQLCCE handbook.

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